

### REMARKS/ARGUMENTS

This application is a divisional application claiming priority to an earlier filed application. Claims 19-25 were initially pending in this application. In response to a restriction requirement Claims 20-22 are withdrawn as drawn to a non-elected species. Applicants reserve the right to reinstate said claims in the event a generic claim becomes allowable (e.g., Claim 19). Claims 26-30 have been added to more clearly claim certain subject matter. No new matter has been allowed. **Claims 19 and Claims 23-30** are currently pending in the application. The applicants hereby request entry and consideration of the following amendments and remarks. Reconsideration and allowance are hereby requested.

#### Rejections Under 35 U.S.C. § 102

**Claim 19** has been rejected under 35 U. S. C. §§ 102(a) as being unpatentable over *Zhao* (USPN 6,198,170). This rejection will be discussed in detail below.

*Zhao* teaches a conductive layer 500 comprising conductive strip 502 having openings D or 504. Then a conductive layer 600 is overlaid directly on top of the conductive strip 500 (i.e., 502). *Zhao* does not teach “forming, over the pad layer, a dielectric layer having a plurality of elongate trenches formed therein, the elongate openings having a long axis, a short axis, and sidewalls and are configured to extend into the dielectric layer to a depth such that electrical connections to the underlying copper-containing pad layer can be formed”. The *Zhao* dielectric D is formed in the openings of the conductive layer only. The dielectric D of *Zhao* is not formed on top of the conductive strip 502 but between the openings 504 in the conductive layer 500. There is no build up of dielectric material on top over of, or over, the pad layer as is the case in Claim 19. Accordingly, it is respectfully submitted that the cited art is insufficient to establish an anticipation rejection of **Claim 19** under §102. Accordingly, the applicants respectfully request that this rejection of Claim 19 be withdrawn.

#### Rejections Under 35 U.S.C. § 103(a)

**Claims 23-25** are rejected under 35 U. S. C. § 103 as being unpatentable over *Zhao* (as applied to Claim 19) in view of *Colgan et al.* (USPN 5,565,707) (hereinafter *Colgan*). For at least the reasons explained above with respect to Claim 19, the applicants respectfully submit that the *Zhao* reference is inapplicable to the present invention. Accordingly, for at least that reason, the cited combination of references fails to establish a prima facie case of obviousness as to dependent **Claims 23-25**.

However, the applicants would additionally like to point out that the feature of *Colgan* Fig. 2 identified in the Office Action (at page 4, 1<sup>st</sup> paragraph) is not an intentional overetch seeking to expose a portion of the sidewall of 30,47. Given the state of the art in the early and middle 1990's it is important to point out that the depicted overetch is an unintentional artifact of etch processes of that time. It is notable that the depicted overetched portion is not pointed out in *Colgan* or in anyway identified as a desirable feature. In fact, there is no lead line or identifying number associated with the residual (and undesirable) overetch feature. Quite simply, Fig. 2 depicts an undesirable artifact of an outdated etch process. In short, it is not a teaching that the sidewall of the conductive pad should be exposed to enhance the electromigration resistance of a resultant electrical interconnect structure.

Moreover, the applicants would additionally like to point out that the planar surface of layer 422 (See, *Zhao* Fig. 4) strongly teaches away from the idea of forming a dielectric layer that has openings extending down the sides of the conductive portions (*Zhao* M1) of the pad. Hence, *Zhao* tends to teach away from the idea of exposing the sidewalls to enhance conduction and reduce electromigration. Accordingly, *Zhao* teaches away from the combination of *Colgan* with *Zhao*. Accordingly, applicants respectfully submit that the cited combination of references do not teach the invention.

In view of the foregoing, the applicants respectfully submit that the cited combination of references fail to establish a prima facie case of obviousness as to Claims 23-25. Accordingly, the applicants respectfully request that this grounds for rejection be withdrawn.

#### **Added Claims:**

The applicants have added **Claims 26-30**. **Claims 26-30** are drafted to specifically point out and further elaborate upon the distinctions explained above. Also, these new claims do not present new matter. Support for these and the other added claims can be found throughout the Specification and Drawings. For example, reference to Figs. 4(a)-4(d) and the supporting portions of the Specification is made.

#### **Conclusion:**

In view of the foregoing amendments and remarks, it is respectfully submitted that the claimed invention as presently presented is patentable over the art of record and that this case is now in condition for allowance.

Should the Examiner, for any reason, wish to contact the undersigned, he is cordially invited to do so at his convenience. Moreover, if the Examiner has any continuing concerns regarding this case, he is invited to contact the undersigned at (650) 961-8300.

Respectfully submitted,

BEYER WEAVER & THOMAS, LLP



Francis T. Kalinski II  
Registration No. 44,177

P.O. Box 70250  
Oakland, CA 94612-0250  
Telephone: (650) 961-8300